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THE HONORABLE JOLIE RUSSO
THE HONORABLE ANN AIKEN

UNITED STATES DISTRICT COURT

DISTRICT OF OREGON

EUGENE DIVISION

CENTER FOR BIOLOGICAL DIVERSITY,

Plaintiff,

v.

U.S. BUREAU OF RECLAMATION,

Case No. 6:15-cv-02358-JR
Consolidated with
Case No. 6:16-cv-00035-JR

SECOND DECLARATION OF THERESA L. SIMPSON

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Defendant,

and

ARNOLD IRRIGATION DISTRICT, CENTRAL OREGON IRRIGATION DISTRICT, LONE PINE IRRIGATION DISTRICT, NORTH UNIT IRRIGATION DISTRICT, TUMALO IRRIGATION DISTRICT,

Intervenor Defendants.

WATERWATCH OF OREGON,

Plaintiff,

v.

U.S. BUREAU OF RECLAMATION, **CENTRAL OREGON IRRIGATION DISTRICT**, **NORTH UNIT IRRIGATION DISTRICT**, and **TUMALO IRRIGATION DISTRICT**,

Defendants,

and

ARNOLD IRRIGATION DISTRICT, LONE PINE IRRIGATION DISTRICT,

Intervenor Defendants.

Case No. 6:16-cv-00035-JR

I, Theresa L. Simpson, declare:

1. My name is Theresa L. Simpson, and I reside in Crescent, Oregon. The following facts are personally known to me, and if called as a witness I would and could truthfully testify thereto.

2. This declaration is prepared in support of Plaintiffs' reply in support of the motion

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for preliminary injunction, originally filed February 9, 2016, and in supplement of my initial declaration in this case signed on February 5, 2016. I have reviewed the proposal by the defendants and intervenor defendants (collectively "defendants"), including their declarations in support of their proposal and response in opposition to the motion for preliminary injunction.[1] In general, the "proposal" by the defendants results in no change (or extraordinarily little change) to the operation of the Deschutes River system (the operations at Crane Prairie, Wickiup, and Crescent Lake dams and reservoirs) and little change to harmful effects on frogs. As set forth below in detail, defendants' "proposal" leaves frogs vulnerable and continuing to be harmed by virtue of continuing the pattern of extreme and frequent fluctuations in flow, and an almost complete lack of water for winter protections. Defendants' responses fail to address the problems identified in my earlier declaration and in annual field observations by various wildlife agencies.

SUMMARY OF NEEDS TO AVOID HARM TO LISTED OREGON SPOTTED FROGS

3. This declaration will review and summarize my earlier declaration regarding the requirements to avoid harm to Oregon spotted frogs in the Upper Deschutes River Basin and how those needs are addressed with the proposals by plaintiffs. Then this declaration will address how the proposals by defendants do not meet the requirements to avoid harm and will allow for and perpetuate harm to threatened spotted frogs.

[1] I note that the Lowell Diller declaration, submitted in support of the irrigation districts, contains no first-hand observations of Oregon spotted frogs in the basin or elsewhere and misreads some of the research (see below). I also note that much of the declaration is directly counter to federal agencies' statements in numerous documents in evidence and contains significant qualifiers and unsupported assertions such as "likely" (¶ 11), "possible" (*id.*), "presumed" (¶20), "may be" (*id.).* These unsupported assertions are based on theoretical speculation, in contrast to the direct observations of spotted frogs, their behaviors, and use of habitat that I and federal agency scientists have documented during twenty years of Oregon spotted frog observation in the Deschutes and Klamath basins, which support my conclusions.

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4. I cannot stress enough that an overarching requirement to avoid harm to spotted frogs in the Deschutes River is to bring consistency and stability to flows more closely approximating natural flows in the mainstem and Crescent Creek/Little Deschutes. This river system is naturally very stable due to it being fed primarily by groundwater through the lava soils as opposed to exclusively snow-melt. Many historical records show a river system that did not vary enormously between summer and winter (in contrast to snow-melt dominated systems). It is critical that the frequent and extreme fluctuations that occur now with the operations of the dams be stopped and avoided in order to address the harm to spotted frogs that is currently occurring every season of every year.

5. I also cannot stress enough that the extreme low flows in the winter months stretching into breeding season are a large and primary source of ongoing harm to frogs. As detailed in my earlier declaration, the extreme low flows in winter kill frogs by eliminating suitable overwinter habitat, subjecting frogs to increased predation and freezing. This is exacerbated and compounded by the extreme fluctuation in flows induced by the fall closing of the dams. The river is forced by the dams' operations from a condition of high summer flows (higher than natural) to extreme low winter flows (hundreds of cfs below natural conditions) over the course of approximately 10 days. As documented by myself in the fall of 2015, and consistent with conditions documented by state and federal agencies in previous falls, this extreme drop to ultra-low levels leaves frogs, especially juveniles, stranded every year, either high and dry or in steadily shrinking puddles or oxbows. Spotted frogs cannot live out of water for long and do not move over land great ("great" being what we might consider fairly short) distances to find other habitat. In turn, they are desiccated, taken by predators or frozen because the water is so shallow and pools so small. Those that make it to the mainstem of the rivers are

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left with trying to live in the main channel flows where again there is little suitable habitat. This is supported by documents I have reviewed, received through the Freedom of Information Act, from various federal agencies, including most recently, the U.S. Forest Service. The Forest Service confirms that extreme low winter flows dewater frog habitat and leave frogs little suitable overwinter shelter.

6. In the spring, frogs need flows adequate to flood breeding habitat at the onset of breeding—most years by mid-March. Even more importantly, those flows need to be relatively stable. Currently, the extremely low winter water levels continue to decrease most years until well after breeding starts, leaving egg masses desiccated and dead. Or, for later breeders who might lay eggs at lower levels, the high irrigation flows that start in April most years flood the eggs and float them into deeper or faster water where their survival is jeopardized. Stable spring flows need to be attained by mid-March and sustained through May of most years. Again, recent photographs from the Forest Service show frog habitat that is dry in April because water is still being held in reservoirs.

7. In summer, the frogs still require relatively stable flows, but there is somewhat more latitude. For summer, I am not so concerned with low flows—most years' dam operations in fact keep flows artificially very high. Notably, a cap on summer flows is necessary in order to preserve water for winter (see below discussion of defendants' proposal and detail in my earlier declaration).

8. Finally, the move to lower (but not extreme low) winter flows must occur over enough days that frogs and fish have time to move with the water to refugia, and must occur early enough that frogs and fish are in their winter habitat no later than mid-October before significant freezing occurs. This is why I have recommended a 30-day fall flow draw-down

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period that ends no later than mid-October. Currently, frogs are left stranded out of water every fall due to the rapid decline in river flows, which increases mortality, and large fish kills also repeatedly occur in the Deschutes in the fall (even during the 12-day "extended" draw-down in the fall of 2014).

ONGOING HARM TO OREGON SPOTTED FROGS FROM OPERATION OF DESCHUTES SYSTEM

9. The Oregon spotted frog was listed as a threatened species under the Endangered Species Act ("ESA") in August of 2014, more than 18 months ago. The consultation process will not be complete for at least another year and a half, and FWS has said it has no control over the Habitat Conservation Plan ("HCP") timelines. Those completion estimates stretch to 2020. The consultation process is intended to keep actions from further endangering species. Harm to individual frogs and entire generations of frogs is imminent from the continued operation of the dams under the defendants' interim plan.

10. Levels of acceptable spotted frog harm (or incidental take) or adverse habitat modification have **not** been established for the Deschutes Project. In the case of spotted frog populations and sites that are currently occupied in the Upper Deschutes Basin, it is imperative to save what you have until the Incidental Take Permit (ITP) process is complete. It is unreasonable to assume the defendants' interim plan will adequately protect occupied sites given that it ignores harm to breeding and overwintering spotted frogs and their habitat. The insufficient action proposed by the defendants' interim plan is particularly worrisome given that small breeding populations found in 2013 at Bull Bend and the south Ryan Slough Camp area sites are no longer detectable, and there are several more very small, isolated breeding populations along the Deschutes River and in the upper reaches of Crescent Creek that could also disappear during the time it takes to complete the consultation and ITP process. The small sites

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around and downstream of the reservoirs that are affected by fluctuating water levels are in contrast to much larger populations found in areas that have stable water levels, such as Big Marsh and Sunriver. Records show that historically there were many more healthy populations of spotted frogs in the Upper Deschutes Basin compared to currently. [2] I observed that there is potential habitat along the Upper Deschutes River to support many more spotted frogs if that habitat receives adequate inundation.

11. The defendants argue that more time is needed to study the system before making any significant changes to dam operations. As a professional biologist with decades of species management experience and collaboration with other professionals, I know that there are always uncertainties around management changes, but it is unacceptable to delay on the basis that there is not enough scientific information to make reasoned and informed changes in dam operations in the Deschutes System. It should be noted that the Upper Deschutes Basin and the Deschutes System have been studied for decades by a multitude of organizations. There is also a well-informed listing rule. The Deschutes HCP effort over the past several years has targeted data gaps and collected data specific to the needs of Oregon spotted frogs in the Upper Deschutes Basin. These many and varied scientific endeavors along with the listing information provide a

[2] I would like to note that the declaration of Lowell Diller, filed on behalf of the irrigation districts, makes an important error in a statement about historic populations of Oregon spotted frogs in the Deschutes Basin. Diller claims at ¶ 25 that there is no evidence of what historical populations were or whether there were ever many frogs in the basin. In fact, the Hayes 1997 paper that he cites does not say that. The paper says the following: "Historical records for the Oregon spotted frog *in the closed basins east of the Klamath and Deschutes Basins* are lacking and current surveys did not detect them, so the presence of which spotted frog taxon occurred or may occur in these basin systems, if any, is ambiguous." (Emphasis added.) That is, the Hayes reference is to basins to the *east* of the Deschutes, not the Deschutes itself. As discussed elsewhere in the Hayes paper, historical records definitely show healthy populations of spotted frogs in the Deschutes Basin. *See also* Sewell Decl., Ex. 3 at 1 (FWS grant application noting historical populations in Deschutes Basin).

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sound scientific basis for making reasoned spotted frog management changes within the Upper Deschutes Basin right now.

12. Defendants propose very little (if any) change to the Upper Deschutes River Basin dam and reservoir system. In my professional opinion, harm from past operations within the Upper Deschutes Basin dam and reservoir system (hereafter referred to as the "Deschutes System" or "System") has contributed significantly to creating the small, isolated populations above and below Wickiup Dam. Today, these small isolated populations are at significant risk of rapid population decline or extirpation (local extinction of a population). Low genetic diversity – a reason for listing spotted frogs as threatened – makes a species less resilient to environmental, ecological, and biological changes and, therefore, more susceptible to rapid population declines and potential extinction. Retaining the genetic diversity within each of the small Upper Deschutes spotted frog populations is critically important to the long term survival of the species. The spotted frog final rule lists the Upper Deschutes sub-basin as having low genetic diversity within the sub-basin and high genetic differentiation from other sub-basins. 79 Fed. Reg. at 51686. Decline or loss of a local population permanently removes those genes specific to that local population from the greater gene pool. The loss of spotted frog populations along the Deschutes River further reduces genetic diversity within the Upper Deschutes Basin and to the species as a whole. Therefore, it is imperative that every possible action be taken to mitigate harm associated with the System operations in order to have any chance of expanding and stabilizing these small populations along the Deschutes River, which is essential for their survival. Defendants' interim spotted frog proposal does not go far enough to mitigate or minimize harm to small isolated populations along the Deschutes River and will further contribute to the irretrievable loss of genetic diversity.

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13. Many of the frog populations in the Upper Deschutes Basin are small (fewer than 50 breeders at a site) and disjunct (more than 3.1 miles apart), making them highly susceptible to extirpation even without any added mortality from water manipulations. *See* final listing rule discussion on Factor E site size, isolation and population turnover rate at 79 Fed. Reg. at 51,686-7. The final listing rule for Oregon spotted frogs also talks about the importance of aquatic connections between breeding sites, the 3.1 mile and 6 mile dispersal standards to determine connectivity, and how current operations with regulated flows likely disrupt connectivity between sites on the Deschutes River mainstem and the Little Deschutes. Defendants' proposal only provides for connectivity for half the year at best and there are many tough obstacles (like waterfalls and rapids) that separate populations. Therefore, allowing extirpation of a sizable number of frogs at any given site (or an entire generation of eggs) and relying on recolonization is highly risky and contrary to the best available science and the listing decision regarding the vulnerability of those small populations. Once frogs at a given site are gone, those genes are lost forever. *See* paper by Blouin 2010 (attached as Exhibit 1 and frequently cited in the final listing rule). Blouin identifies the central Cascades Oregon spotted frog group (which includes the Upper Deschutes Basin frogs at issue here) as evolutionarily significant, and with low genetic diversity.

14. Between 2013 and 2015 frogs were no longer detectable at the Bull Bend site and the south Ryan Ranch site in the Slough Camp area along the Upper Deschutes River. I am very concerned that spotted frogs in these sites may already be extirpated with a loss of genetic diversity and thereby an adverse impact on the Upper Deschutes frog population as a whole. The remaining small, unstable populations at Wickiup, Dead Slough and Slough Camp area are also susceptible to extirpation without adding stresses from yet another year of unchanged System

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irrigation operations. The flow moderations suggested by myself and plaintiffs keep conditions more closely-aligned with the historic flow regimes to which Oregon spotted frogs have evolved and in my opinion need to be implemented immediately to keep from extirpating the few, small, isolated population sites in Wickiup and along the Deschutes River.

COMPARISON OF PROPOSALS AND FAILURE OF DEFENDANTS' PLAN TO ADDRESS HARM FROM DESCHUTES SYSTEM OPERATIONS

15. In contrast to plaintiffs' run-of-the-river proposal that provides for stable flows to avoid harm to spotted frogs and frog habitat year round, the defendants' plan operates far outside the historic flow regimes under which Oregon spotted frogs evolved, and each year it accelerates the rate at which these small remaining populations are moving toward extirpation. This will be true in the next 12-18 months. The defendants' plan completely ignores aquatic connectivity and overwinter habitat needs for at least half of the year. Defendants' plan also proposes and allows significant habitat variability due to continuing flow variation at each spotted frog site during the breeding season (commencing flows later than breeding actually starts and failing to cap flows later in the irrigation season). Defendants propose very little (if any) change to the current Upper Deschutes River Basin System operation and as a result, harm to spotted frogs will continue every season of every year. That harm is imminent as soon as breeding begins this year and will be certain in the fall and winter should either current operations continue or defendants' proposal be implemented (as they are largely the same).

16. Defendants propose some minimal changes in the spring timing of releases, but nothing else to avoid the ongoing harm to frogs. Defendants propose to release at least 600 cfs from Wickiup dam from March 31 through September 15 of each year and to start increasing flows early enough in March to reach the 600 cfs by the 31st. Spring flows will start a little earlier than they do now (although not as early as breeding starts) and that is beneficial for

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breeding, but there is no requirement to maintain stable flows. Importantly, it should also be noted that current operations, once the dams are opened in the spring and through September, already exceed the 600 cfs "offered" as a flow target by defendants. In fact, flows usually far exceed this level in the summer months at the behest of the irrigation districts, approaching levels sometimes as high as 2,000 cfs and usually at least as high as 1,200 cfs. Moreover, as I discuss below, whatever gain frogs might make with this 2-3 week earlier start to flows is obliterated by the negative changes and/or lack of change in the fall and winter.

17. Therefore, the proposal for minimum 600 cfs doesn't change anything from current conditions, but for a slightly earlier start time to spring flows. And, as noted in my first declaration, failing to cap those flows contributes to the instability in the system during breeding and rearing, but even more importantly, will result in the reservoirs being drained with nothing left for frogs for fall and winter flows. This is precisely the situation now. Defendants' proposal is effectively a proposal for business as usual.

18. Defendants' proposal also shortens the time for fall ramp-down of flows. Currently, in most years, the fall ramp-down is spread over 10 days. In 2014, a "voluntary" measure of 12 days was implemented. Even under a 10- or 12-day ramp-down, the lowering of river flows is sharp and extreme going from the very high summer flows to the 20 cfs winter flows in a very short time. I discuss at length in my first declaration the harm to frogs (and fish) that occurs every year because of this, which I personally observed in 2015. A 7-day ramp-down will be even more extreme and harmful than what I observed this past fall. Moreover, defendants propose to do this in October, when frogs are at even higher risk of harm from predation or freezing. It appears that this drastic measure is how defendants will try and "make up" some of what they give in the 2-3 week earlier start for spring flows.

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19. Finally, defendants' proposal allows for no change in the extreme and extremely harmful low winter flows, allowing harm to frogs from such drastic low flows to continue unabated into the future. It is plain to me based upon my experience in the basin that the refusal to cap high summer flows means that there is little water in reserve for winter and defendants will expect to fully refill the reservoirs during the winter months. It is plain that this is why defendants refuse to protect frogs in the fall and winter. The failure to require minimum winter flows means that there is very limited suitable winter habitat. Any benefits to frogs during the breeding season from Defendants' earlier irrigation releases will be negated by the lack of overwinter habitat. Without slowing fall ramp-down and providing more suitable overwinter habitat, most frogs will still die during these seasons.

20. Defendants' proposal also incorporates the proposal made to the Bureau of Reclamation in the fall of 2015 to release a minimum of 30 cfs from Crescent Creek dam. As described in my earlier declaration, I have directly observed that this additional water does not avoid harm to frogs in Crescent Creek and the Little Deschutes either during breeding or overwintering.

RELATIVE "HARMS" BETWEEN PROPOSALS AND CLAIMS THAT PLAINTIFFS' PROPOSAL WILL HARM FROGS

21. The Moran declaration at ¶ 10 states that Fish and Wildlife Service ("FWS") recognizes spotted frogs are stressed by the current System and that FWS supports a gradual and adaptive restoration approach, with considerable monitoring to assess and adjust flows to optimize conditions for the frog. The Moran declaration simply dismisses the significant deficits in the defendants' plan discussed above by deferring to some unknown conservation measures that will eventually come out of Section 7 and 10 processes 1-5 years down the road (Moran ¶ 8).

22. Ms. Moran claims concern for what she characterizes as "extreme and immediate

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changes" to the system that plaintiffs' run-of-the-river (or regulated) interim plan proposes (Moran ¶ 10). Upon examination, Ms. Moran's characterization is neither supported nor supportable. The plaintiffs' run-of-the-river proposal increases flows in spring in accordance with natural conditions, varying only with natural variation through the entire breeding season. Plaintiffs' proposal then holds winter flows at natural levels, with those levels not falling below 500 cfs in most years. (Kamman Declaration.) In sharp contrast, the defendants' plan creates varying habitat conditions during the breeding season by increasing flows from 20-30 cfs to at least 600 cfs at WICO by March 31 (later than breeding begins in most years) and then beginning irrigation flows by mid-April that will be at 1000 to1200 cfs in order to meet irrigation demands. Defendants' proposal allows flows to then vary several hundred cfs up and down through the summer (*see* Moran ¶ 35, Figure 5) to meet irrigation demand until a one-week sharp ramp-down to winter extreme lows of 20 cfs at the end of the irrigation season in October as opposed to the much narrower flow variations expected with natural run-of-the-river.

23. Moran at ¶ 17 also claims that the flows in plaintiffs' proposals may no longer inundate the same wetland acreage that is currently inundated with the artificially high summer irrigation flows. As described in my first declaration, there are varying habitat needs for different spotted frog life stages and seasons throughout the course of a year. The defendants, in particular FWS, have an obligation to address all habitat needs and avoid take at all life stages, not just in summer. Summer flows under Plaintiffs' proposals would still inundate non-breeding habitat, just not the same areas that might currently be inundated under the normal irrigation flows. In contrast, Defendants' proposal would not address the extreme limitation in overwinter habitat at all.

24. Moran's concerns are not supported by the evidence and in fact, often contradict

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themselves or other FWS statements. While plaintiffs' interim proposals provide for a somewhat reduced amount of inundated wetland habitat during the irrigation season (with flows less than the currently artificially high irrigation flows), it is necessary to do so in order to provide a *substantial gain* of inundated wetlands and low flow edge habitats in the fall and winter that support both aquatic connections for movement between seasonal habitat areas and suitable habitat for overwintering frogs during the non-irrigation season. Plaintiffs' run-of-the-river proposal in particular closely mimics the historic flow regime that Oregon spotted frogs evolved under. Plaintiffs' proposals plainly do not dewater all summer habitat and the FWS acknowledges as much. For instance, Moran at ¶ 28 says that breeding conditions would improve at Dead Slough with plaintiffs' proposed 770 cfs regulated option (and because natural flows are closer to the 770 cfs in summer, the same would be true with the run-of-the-river option). Moran at ¶ 23 expresses a different concern that 770 cfs will *increase* water depths in breeding habitat too much at the Old Mill site without acknowledging the glaringly obvious fact that flows proposed by the defendants' plan would be significantly higher than plaintiffs' during all but the first few weeks of the irrigation season. These statements simply do not support the claimed FWS "concerns" with plaintiffs' proposals.

25. Similarly, defendants' claimed "concerns" regarding Slough Camp are not supported by the evidence and are contradictory. Moran at ¶ 34 says the Slough Camp wetlands will not be inundated by river flows or the area (e.g., acreage) of inundation will be greatly reduced thereby limiting breeding and rearing habitat. In fact, other FWS evidence contradicts Ms. Moran's statements about Slough Camp. FWS's primary spotted frog biologist recommended increasing flows below Wickiup to at least 500 cfs this past April to improve breeding conditions at East Slough Camp, contradicting Ms. Moran's statement that Plaintiffs'

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proposal of 770 cfs would not benefit East Slough Camp. Sewell Decl., Ex. 9; Moran ¶¶ 23, 34. Furthermore, FWS and I know that the Slough Camp area is supported by a series of springs on both sides of the river that likely provide spotted frog overwinter and breeding habitat. The Slough Camp area has perennial spring ponds used by spotted frogs and is not completely dependent on river flows to provide inundated wetland habitat. The final listing rule is full of discussion about spotted frogs' use of this type of habitat. It is my opinion based upon the information in and behind the listing rule, information about Slough Camp in government documents and my own observation that the Slough Camp area spring ponds will adequately support the breeding, rearing and nonbreeding habitat needs for Oregon spotted frogs that currently use this area for the next 12-18 months under either of plaintiffs' proposals. Furthermore, the 600 cfs winter flows in plaintiffs' proposals for the nearby Deschutes River will greatly contribute to *improved* overwinter conditions at the Slough Camp site by increasing groundwater support and surface pool size and depth at the spring ponds resulting in a net benefit for spotted frogs and avoidance of harms caused by extreme winter low flows.

26. Ms. Moran also claims that 600 cfs may not be enough to provide more overwinter habitat, Moran ¶ 44, but yet endorses Defendants' proposal that uses the same flow in spring to inundate breeding habitat, Moran ¶ 8. A minimum flow of 600 cfs would improve overwinter habitat just as it would improve breeding habitat. In fact, FWS has stated numerous times the need to increase winter flows in the Upper Deschutes basin and has recommended a minimum of 500 cfs. *See, e.g.*, Sewell Decl., Ex. 7 at 4. My own personal observations confirmed the harm that occurs in fall and winter in these areas and the very limited amount of suitable overwinter habitat under current conditions. This information clearly supports Plaintiffs' proposals to change operations in winter to avoid harm to spotted frogs.

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27. Attached to the Second Sewell Declaration is a PowerPoint presentation that I have reviewed. Included in that presentation are a series of photos showing frog habitat at various locations in the Upper Deschutes Basin at different times of the year under different System flow regimes. It is my understanding that this PowerPoint and additional photographs were recently received by counsel for the plaintiffs from the U.S. Forest Service. These pictures are representative of conditions that I have personally observed at this and other spotted frog habitat sites in the Upper Deschutes Basin over recent years. These photos show the extreme variation in water levels at frog habitat locations demonstrating the damaging nature of current System operations. The early spring photos show that there is little to no water available for spring breeding because under normal System operations water is still being held back to fill reservoirs. The fall photos also show extreme low water levels at a time when juveniles are vulnerable and should be settling into over-winter habitat. I have viewed other similar sets of photos from the Forest Service for other identified spotted frog habitat sites and they show similar things.

28. Also in the PowerPoint presentation and other documents received very recently from the Forest Service, Forest Service identifies recommendations for flows markedly similar to those in Plaintiff's proposals. In particular, the Forest Service also identifies a minimum of 500 cfs as critical for over-winter flows to protect spotted frogs.

29. Finally, Defendants' proposal will continue to harm frogs around Crane Prairie and Wickiup Reservoir by allowing water levels to drop significantly in summer and fall, leaving little or no inundated edge habitat. BOR's biologist noted that lowering reservoir levels below suitable vegetation eliminates habitat for spotted frogs around the reservoirs. Willey Decl., ¶¶ 51, 62. I observed these exact conditions this past summer and fall, and in past years, when both

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Crane Prairie and Wickiup water levels were below all edge vegetation, virtually eliminating all suitable habitat around the reservoirs. As explained in my first declaration, hydromet data shows that this condition occurs every year due to the large drop in reservoirs levels over the summer and fall. Defendants' proposal only maintains water levels from mid-March until mid-July in Crane Prairie but continues to drop water levels and eliminate suitable habitat in Wickiup early in the rearing season. Plaintiffs' proposals improve habitat suitability by maintaining inundated edge vegetation in Crane Prairie year round. Plaintiff's proposals also maintains suitable edge habitat longer in the rearing and overwinter season in Wickiup than defendants' proposal. While defendant's proposal does little to reduce harm, the Plaintiffs' proposal would provide significant habitat improvements year round in Crane Prairie, and also provide a modest improvement for Wickiup Reservoir.

30. Plaintiffs' run-of-the-river proposal avoids the harm and addresses all habitat and life stage needs in all seasons in a careful and reasoned approach that uses historic flow regimes as the foundation for recommendations. The defendants' plan continues the current harmful approach in most seasons of the year. Therefore, I find Moran's assertions that plaintiffs' proposal is somehow harmful unsupported and unsupportable.

ADAPTATION AND "FROG STRONGHOLD" CLAIMS BY DEFENDANTS

31. Defendants also claim that their proposal for business as usual is superior to plaintiffs' because Oregon spotted frogs have "adapted" to the severely altered System and/or that there are some frog "strongholds" in the basin so losing frogs over the next several years will not harm the population of spotted frogs as a whole. These arguments too are without support in the evidence and are not even logical given the listing decision for spotted frogs. I will address each in turn below.

32. First, arguments that Oregon spotted frogs have adapted to altered conditions

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created by irrigation operations (*see, e.g.*, Moran at ¶ 17) is in direct conflict with the evidence and shocking in its erroneousness. Defendants claim that frogs have somehow "adapted" to the current severely-altered system and that implementation of either of the proposals in my earlier declaration will, in some unspecified way, "harm" frogs. This argument is scientifically flawed and the fact that the regulatory agency makes such a foundational error in Oregon spotted frog management in its rush to support the districts, poses a substantial risk to spotted frogs. Frogs have **not** "adapted" to the current extremely harmful system on the Upper Deschutes River basin. Evidence of this is the very listing itself. Oregon spotted frogs are in serious trouble warranting their listing as threatened under the ESA. Proposed critical habitat includes all of the Upper Deschutes Basin from Bend upstream through the reservoirs. That is, the FWS has made an initial determination that protection of these areas is critical to the survival and recovery of Oregon spotted frogs. Moreover, the listing decision makes clear that altered flows for irrigation—precisely the issue here—are a primary cause of the frogs' decline and need for listing. The final listing decision specifically identifies Crane Prairie, Wickiup, and Crescent Lake dams as causing harm to spotted frogs, resulting in small isolated populations along the rivers. Listing information indicates frogs have not adapted successfully in the Upper Deschutes Basin, not the premise made by defendants.

33. If frogs had successfully adapted to the altered system, we would see larger and more stable populations well connected throughout, but we do not. Rather, as discussed above, many populations are small, isolated and disjunct, and in serious danger of being extirpated in a single season. Only Sunriver and the Old Mill populations along the Deschutes River are stable, and that is simply because they have their own separate water management strategies that incorporate spotted frog needs—these populations are mostly unaffected by the System operation

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that is wreaking havoc with frogs throughout the rest of the Upper Deschutes River. If frogs had truly adapted to the current system, there would not be repeated desiccation of egg masses in spring as observed by FWS or stranding of frogs in fall during draw-down as I observed. The fact that mortality is still high in spring and fall indicates that frogs have *not* adapted to the current system.

34. Specifically, the Wickiup and Deschutes River populations directly affected by irrigation operations have not adapted to fluctuations that are far outside the historic flow regime. Instead, these populations are very small, very isolated, and at high risk of being extirpated. Wickiup has only a handful of breeding frogs.[3] Between 2013 and 2015, spotted frogs disappeared from the Bull Bend site and the south Ryan Ranch site along the Deschutes River. This is not what happens in populations that are "adapted" and "stable." Dead Slough dropped from 19 breeding females to 17 breeding females from 2013 to 2015, and even the important Slough Camp sites have less than 50 breeding females combined, all very small populations with more than 6 river miles separating them and isolating them from each other. Two of the frog habitat sites are empty and remaining populations in Wickiup and Deschutes River affected by irrigation operations are in serious danger of also being extirpated. It's conceivable that these remaining populations could be wiped out or further reduced in population size in the next 12-18 months. Clearly, action is needed to alter the current System operation immediately to keep from wiping out what little is left at these remaining sites along the Deschutes mainstem. The contention that Oregon spotted frogs have adapted to irrigation operations in the Upper

[3] I'm particularly worried about the Wickiup populations and they may be in jeopardy regardless of efforts in the near term, but certainly the fact that the run-of-the-river modeling by Mr. Kamman provides for a more stable level in Wickiup will be much less harmful than either current operations which quickly drain Wickiup during irrigation season or defendants' proposal which will end in the same result.

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Deschutes River is unfounded.

35. Declarations for both defendants also make claims about frog "strongholds" and that the populations at Sunriver and Old Mill will allow Oregon spotted frogs in the Upper Deschutes Basin to live on so there is no need for injunctive relief. As discussed above, this completely ignores the precarious state of the Deschutes River spotted frog populations in the Upper Deschutes sub-basin and the importance of genetic diversity as identified by Blouin and the FWS in its listing decision. Also as discussed above, the populations at Sunriver and Old Mill have their own water management regimes, insulating them from the harms from System operation (which also bolsters the fact that the System operation is plainly harmful to listed spotted frogs in the Basin). Contrary to the Diller Declaration at ¶¶ 26 and 27, the Sunriver site is not connected to the majority of Upper Deschutes sub-basin sites; in particular, it is only connected to some sites in the Little Deschutes sub-basin. The "aquatic corridor" that Diller references is simply the river, and his statement exhibits a complete lack of understanding of the characteristics of the river at various locations and the actual connectedness of frog habitat. Further, while Sunriver does have a large population that appears healthy, Old Mill is hardly a stronghold. Most importantly, the ESA does not manage for strongholds at the expense of wiping out smaller, more vulnerable populations. Rather, stronghold sites sometimes get greater leniency in permitted actions while unstable populations get *greater protection* under permitted actions. The ESA recognizes the importance of maintaining genetic diversity and that's why effort is made to hold onto and expand and stabilize small populations rather than just to fall back on or manage for "strongholds."

36. The status of the Crescent Creek and Little Deschutes spotted frog populations within the Little Deschutes sub-basin falls between the "stronghold" status of Sunriver and the

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extremely precarious status of the smaller mainstem populations. Some sites in the Crescent Creek/Little Deschutes tributary do appear more stable while other sites decidedly not. For example, the two Hwy 58 sites and the Black Rock site in the upper half of Crescent Creek have tiny populations at great risk of disappearing in a single season or year. Sites on the lower end of Crescent Creek are a very long distance away from the upper creek sites and appear to have more stable, though small, populations. Importantly, the lower Crescent Creek populations are in close proximity to each other and to Little Deschutes sites, so risk of gene loss and population decline is lessened for these sites as compared to the high risk at upper creek sites.

37. Also, the Sunriver population of spotted frogs is considered connected to the Little Deschutes River populations for purposes of dispersion and genetic exchange. (Sunriver is at the confluence with the Upper Deschutes and Little Deschutes Rivers.) However, the connected populations are only those in the Little Deschutes and lower reach of Crescent Creek, not the twenty Upper Deschutes sub-basin populations or the three Little Deschutes sub-basin populations in the upper reach of Crescent Creek.

38. The Big Marsh population, also mentioned by Defendants as a stronghold, is isolated from all other populations.

39. To summarize, for purposes of maintaining genetic diversity within these sub-basins, these "stronghold" populations at Sunriver and Old Mill provide limited exchange/preservation of genetic diversity in the Little Deschutes sub-basin and none with populations in the Upper Deschutes sub-basin. The Big Marsh population does not connect to or support genetic exchange with any other spotted frog population.

40. Finally, it should be noted that the Sunriver spotted frog population provides an example of how flows designed to support Oregon spotted frog habitat can accommodate a large,

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stable and growing spotted frog population *despite all the other threats present, including a large bullfrog population.* It is possible to create conditions that are similar to those under which spotted frogs evolved. Plaintiffs' run-of-the-river proposal returns flows in the Upper Deschutes River Basin closer to natural conditions under which frogs evolved allowing them to more easily adapt and build stable populations.

41. Particular to the bullfrog issue, I also note this is an additional area where the Diller declaration is in conflict with the evidence and even with its own assertions. While bullfrogs do in fact prey on spotted frogs, that factor is a reason to remove additional threats to spotted frogs such as the operation of the System that has been identified as a primary threat in the listing decision. Bullfrogs are not found in all spotted frog habitat in the Deschutes basin (a fact recognized by Diller) and where they are most numerous, in Sunriver, spotted frogs are also thriving (also recognized by Diller), which is a testament, contrary to his unsupported assertions, to the importance of maintaining consistent water levels in habitat.

42. I am also aware of concerns regarding the fish in the Deschutes River being affected by plaintiffs' proposals for altering System operation. Under current operations and under defendants' proposal, the large fish kills in the Upper Deschutes Basin that have been occurring every year for successive years (and the "bucket brigades" organized to try and save fish) will continue. The proposals I recommend in my earlier declaration will alleviate those fish kills. Further, the proposals I recommend in my earlier declaration, especially the "run-of-the-river" proposal will move the river system much closer to natural conditions. Natural conditions will be much better for all fish in the river and will not result in harm to fish.

43. In conclusion, I want to emphasize the need for a plan that addresses the full year to avoid harm to Oregon spotted frogs. While defendants have proposed a small change in an

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attempt to add some benefit for frogs during part of the spring breeding, it is critical to note that if the defendants' proposal is allowed to be implemented, with no cap on summer flows, there will be a problem with providing winter flows adequate to avoid harm to frogs. Providing minimum winter flows of more than 500 cfs at WICO is imperative to avoid the harm that has been occurring every fall and winter from the rapid receding of water during draw-down and the severe lack of suitable overwinter habitat along the Upper Deschutes River. Therefore, it is my expert opinion that the matter must be addressed as an annual plan in order to avoid the harms from current operations or the harms I expect from defendants' proposal.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Executed this 10th day of March, 2016 at Crescent, Oregon.

Theresa L. Simpson

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CERTIFICATE OF SERVICE

I certify that on March 10, 2016 , I electronically filed the foregoing with the Clerk of the Court using the appellate CM/ECF system, which system will serve all parties who are registered participants.

/s/ Janette K. Brimmer
Janette K. Brimmer

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